PHENIX

TECHNICAL SUPPORT 2009

PHENIX WEEKLY PLANNING

4/2/2009

Don Lynch

PHENIX

TECHNICAL SUPPORT 2009

Yesterday's Maintenance Access Day

- Replaced HBD resistor
- RPC noise problems improved significantly with LV filter
- Measurements for RPC Installation Done
- AC Compressor replaced Ac is good? [for now]
- Tunnel scintillator clock problem fixed (fiber swap)

Next Maintenance Access Day – April 15 (A Very Taxing Day)

PHENIX

TECHNICAL SUPPORT 2009

Tunnel northeast side

Tray with a few cables and a couple of pipes that will need to be moved

Some basket tray and a few cables that will need to be moved

TECHNICAL SPECIFICATIONS

Vapor Barrier to be removed prior to commencing RPC installation.

Barrier to be replaced by new thermal insulating wall attached to the existing imbedded unistrut. 80" from MuID steel.

Crystal Palace needs to be completely removed for installation, modified and reinstalled for run 10

PHENIX

TE

PORT 2009

North West corner of IR

South West corner of IR. This is the tightest spot, just 26" of east west clearance

South East corner of IR

North East corner of IR. This is most accessible corner 30+" of clearance

These are the locations where the crane supports could interfere with moving the half octants back and forth for installation purposes. Roughly +/- 7 feet from centerline.

PHENIX

TECHNICAL SUPPORT 2009

Run Support & Other Ongoing Work

Run Technical Support (mech, elec., gas)

As needed → always takes priority

RPC Factory Support (continuing)

(see slides later)

Prep for 2009 Shutdown

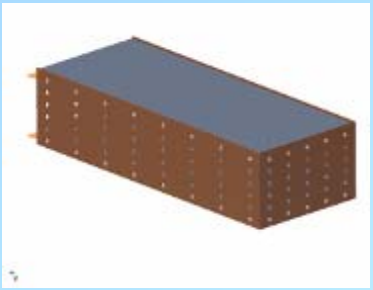
Design PC1 East maintenance support fixtures
design 3/31, fabrication 5/31
MMS Scaffolding Design
design Done, ordering/fabrication 5/1
RPC3 North installation Prep
Installation plan (including inst'n site prep plan) 3/31
Installation fixture design 4/30
Installation fixture fabrication 6/26

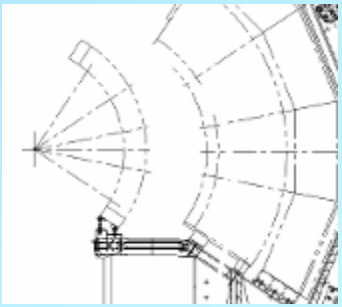
Upgrades Support

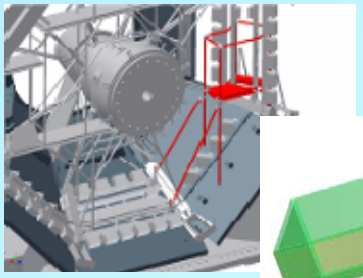
New Beampipe supports (back logged)
NCC prototype design support (on-going)
VTX fabrication tooling design (on-going)
VTX installation design (on-going)
FVTX design/eng'g support (no support req'd yet)

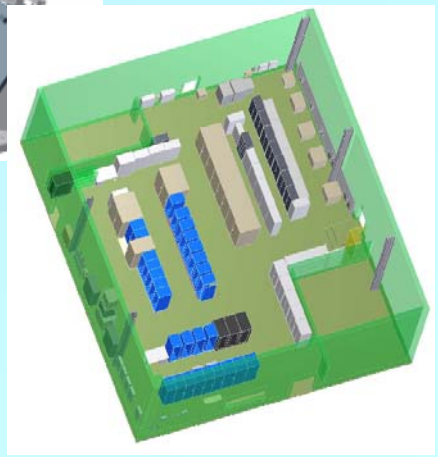
Maintenance & Overhead Tasks

Procedure Review/Updates (ongoing)
Rack Room, AH, Trailer, Mixing House, etc. (ongoing)









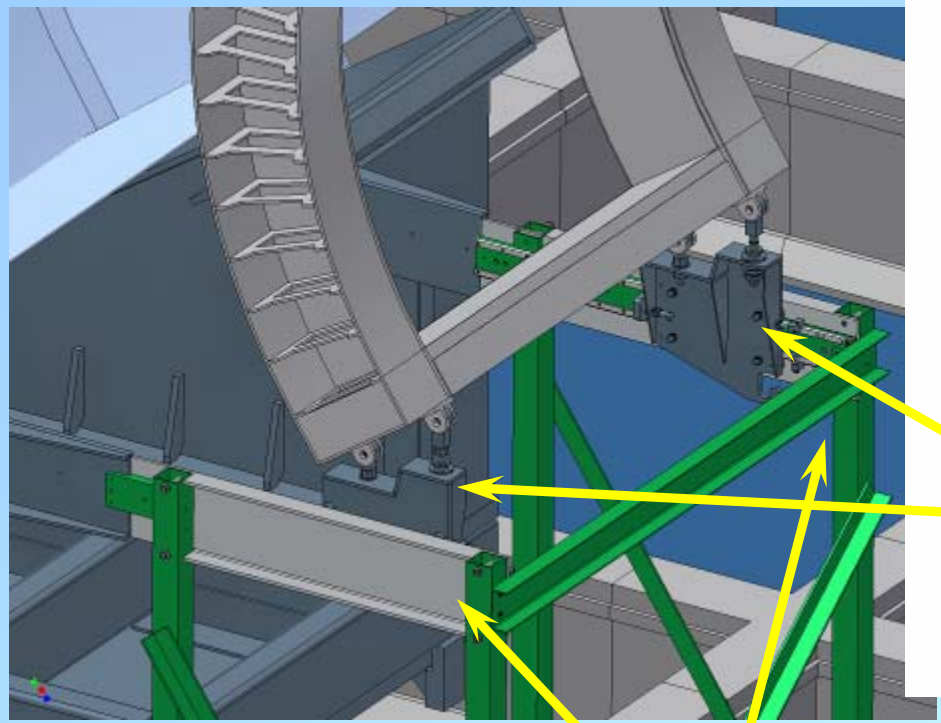
PC1 East Repair Fixturing Design

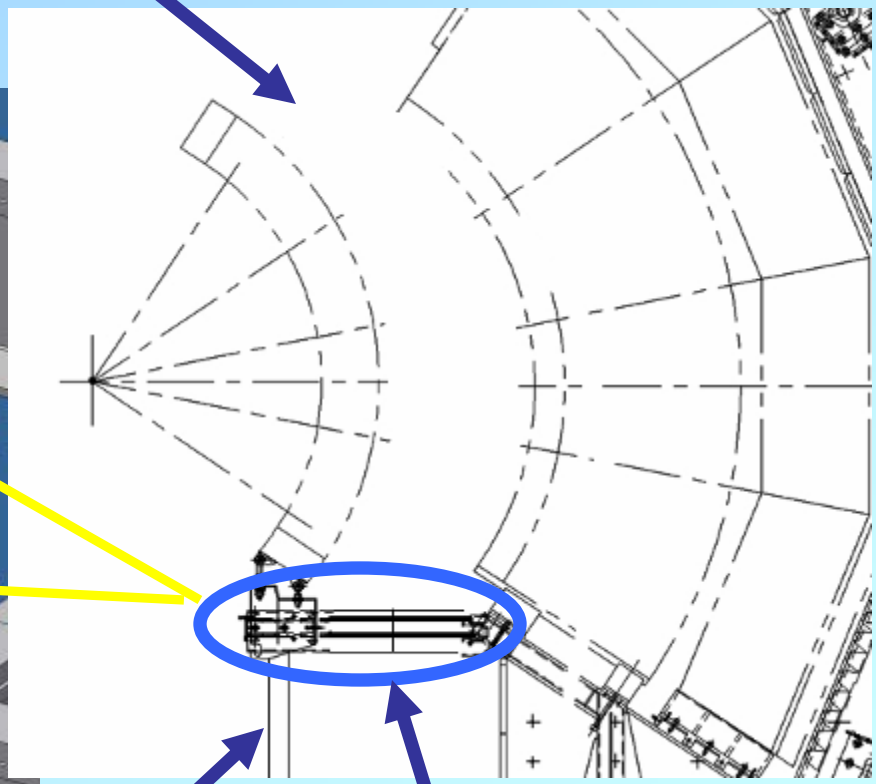
PHENIX

TECHNICAL SUPPORT 2009

Repairs to be performed during '09 Shutdown

Access to PC1 is adequate to remove and replace module

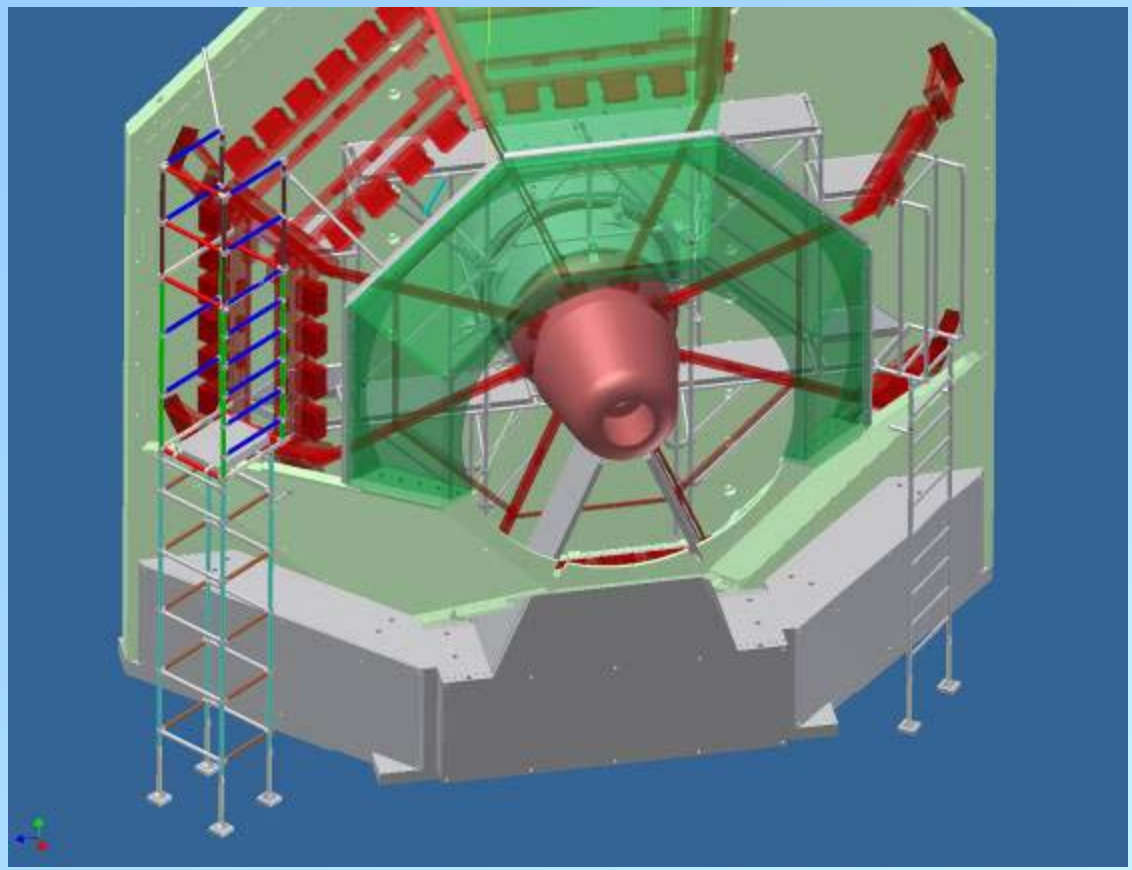




Drawings done CS quote is next

New Column Supports Under railway extensions

New Railway extensions will allow DC to be pulled out ~ 3 feet more



MMS scaffolding

Designed for MuTr installation. Approved in 2000 for use. Stress analysis done for worst case. Current design has minor modifications.

Concept approved at
C-A Design Review

Bargaining Unit negotiations are next

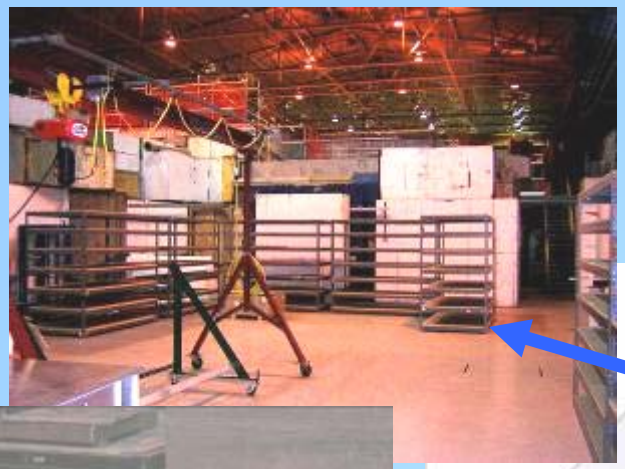
PHENIX

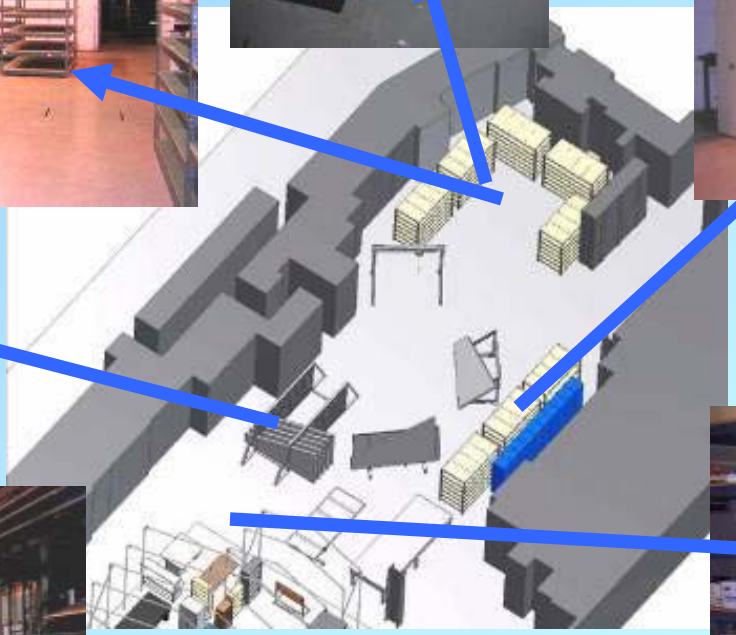
TECHNICAL SUPPORT 2009

RPC Factory Support Tasks:

- Design and order environmental control system for Burn-In Test Stand *(in progress)*
- Assemble gap & module storage with humidity control, 1st humidity control unit received. *(assembly in-progress)*
- Assemble tilting transport table *(in progress)*
- Assemble burn-in test stand (bike rack) *(after TTT complete)*
- Extend gas, electric and safety systems to Burn-In Test Stand *(in progress)*

RPC Factory





RPC Factory

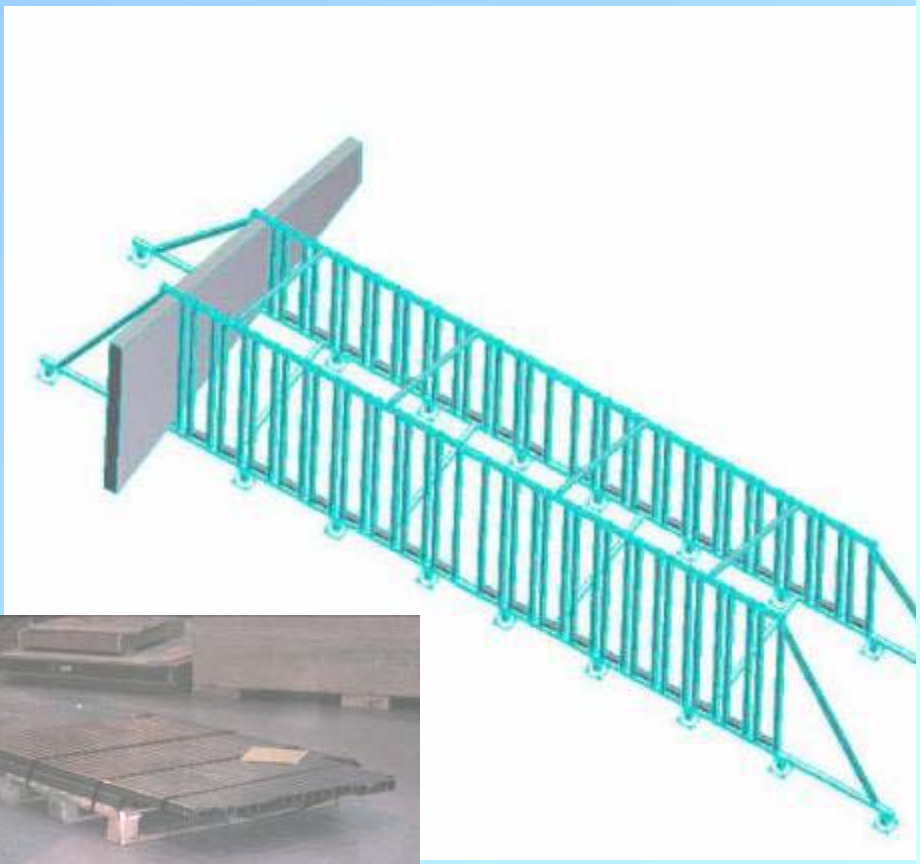
Tilting Transport Table

Fabrication in progress

Concept approved at
C-A Design Review, with minor corrections

Concept approved at
C-A Design Review waiting
in the task queue

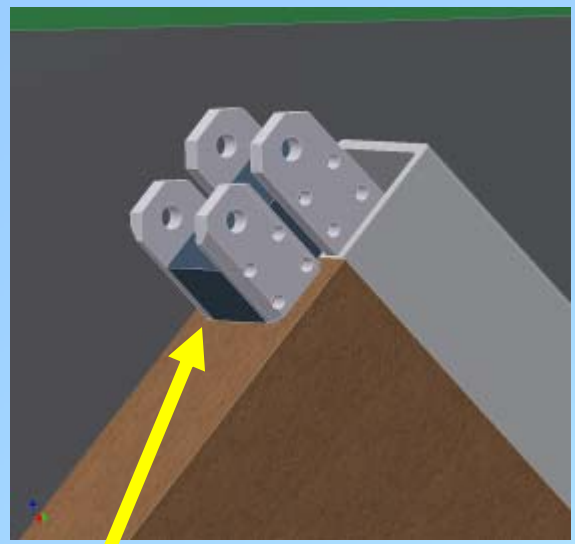
RPC Factory Burn In Test Station For Octant and Half Octant Burn-in Tests

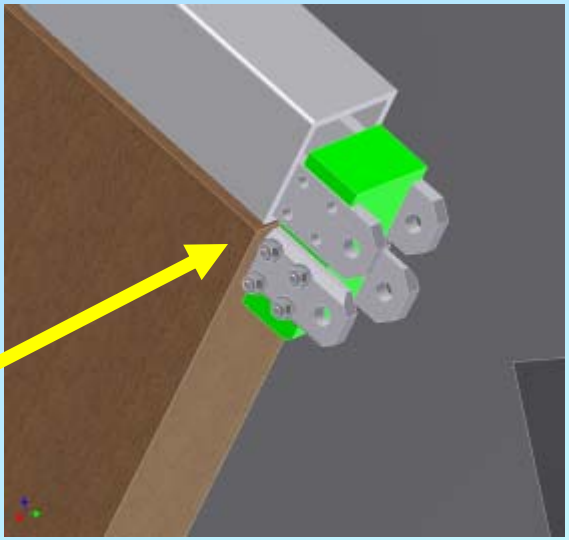


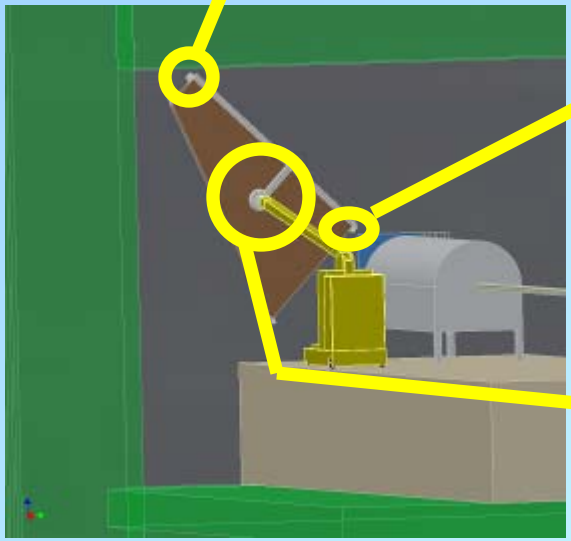
Mechanical Requirements:

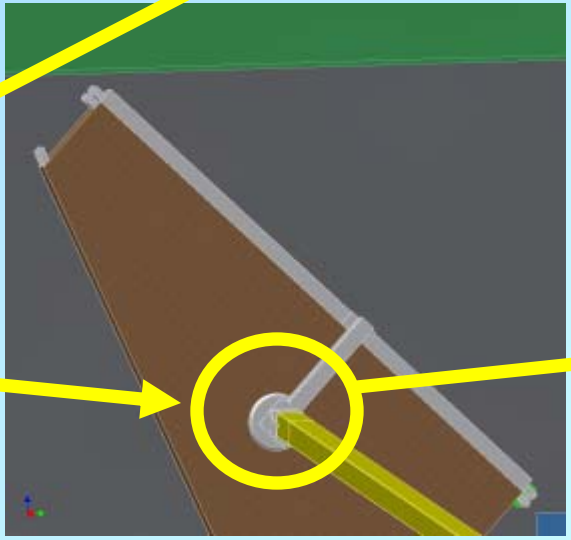
- Slots for 20 detector units, max. 10 under test and 10 storage
- Each detector weighs ~ 750 lb
- Each slot to have 2 rollers
- Separation between rollers spaced to allow half octant to rest in slot with unit center of gravity mid way between rollers
- Rollers must be sufficiently close to catch unit before center of gravity passes first roller

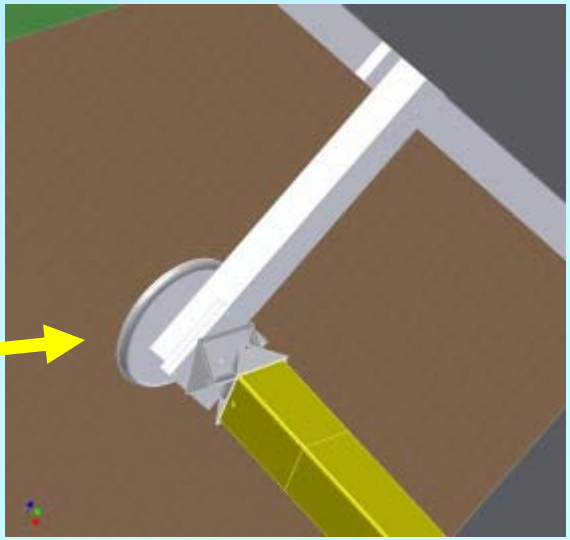
RPC 3 North Installation Tooling Concept

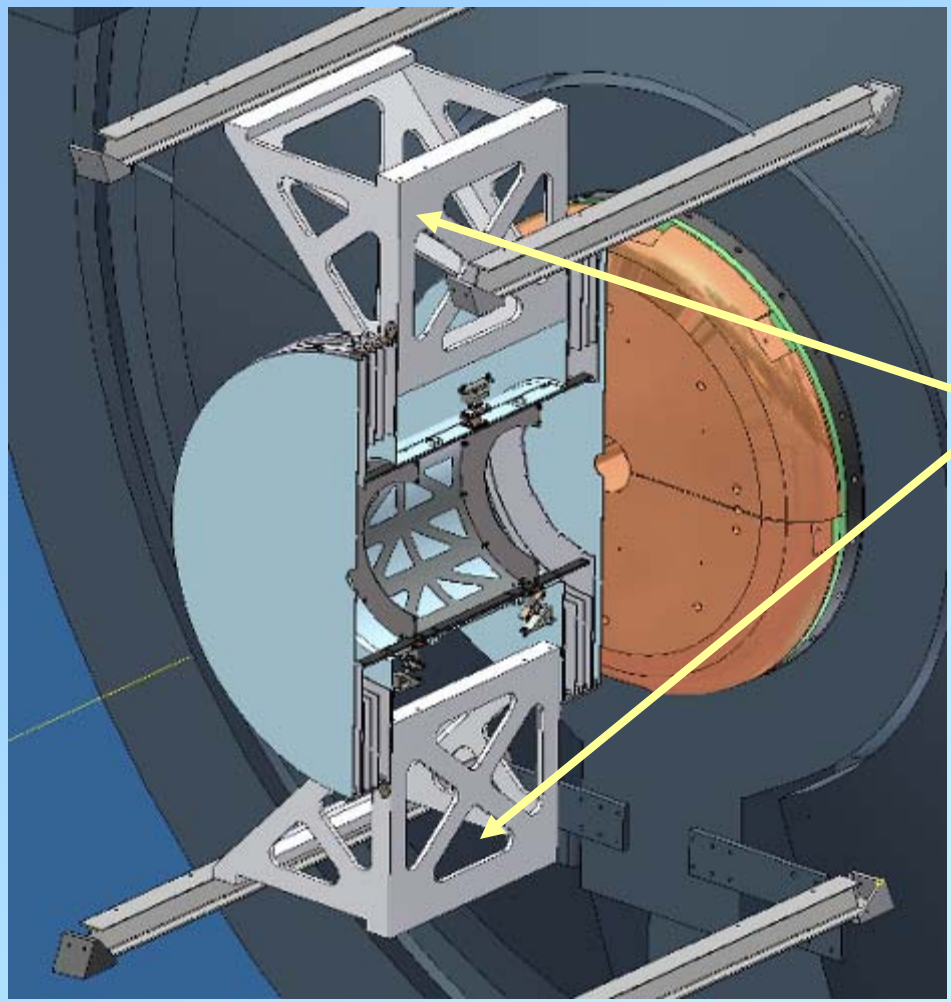






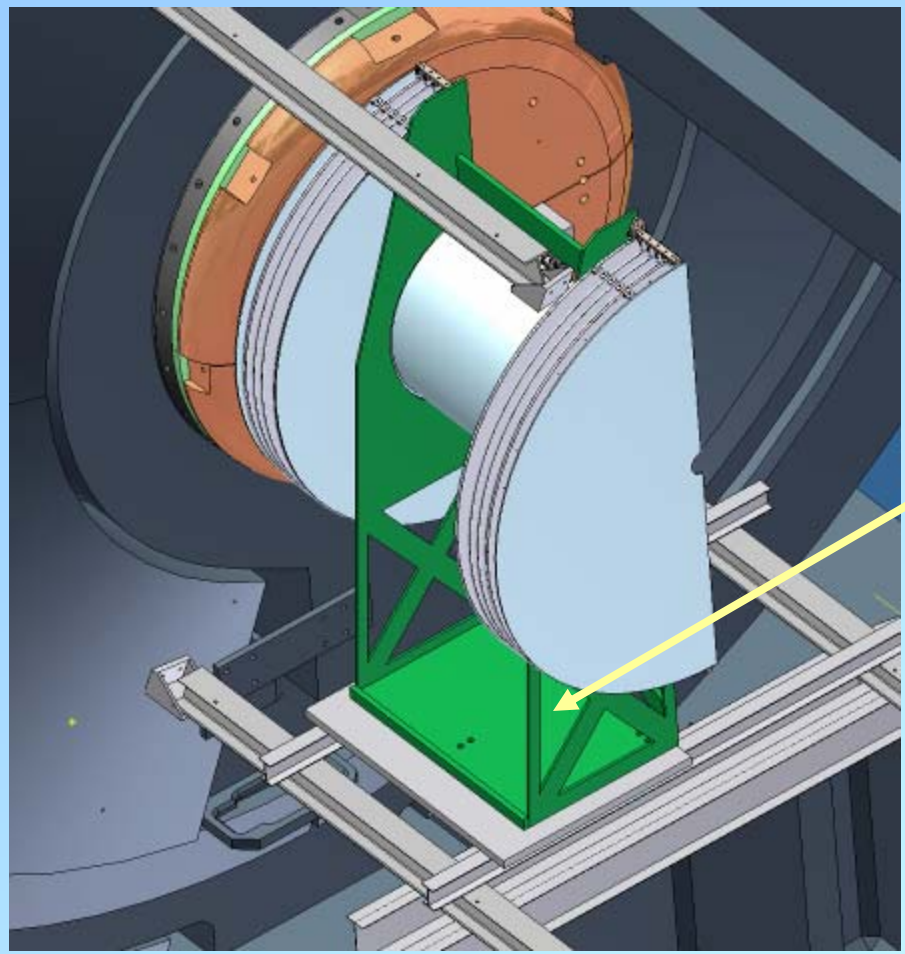






Original concept:

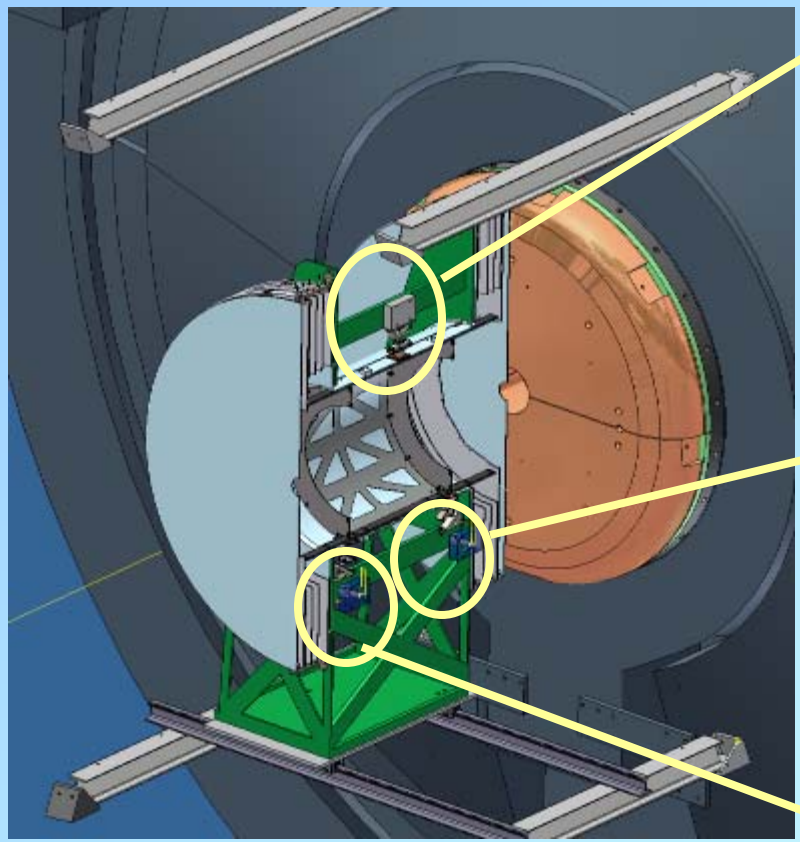
Separate upper and lower detector supports attached independently to upper and lower I-beams

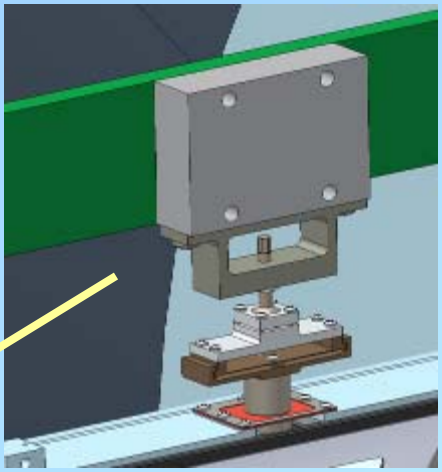


BNL concept:

Single support structure attached at 3 points to west detector sled, 6 degrees of adjustment

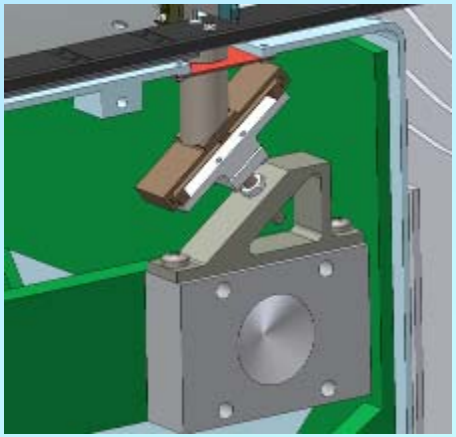
Kinematic Mounts for mating east and west detector halves

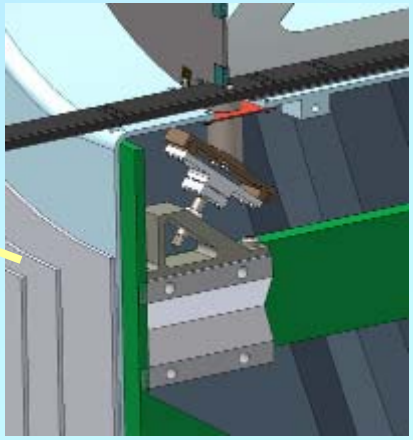




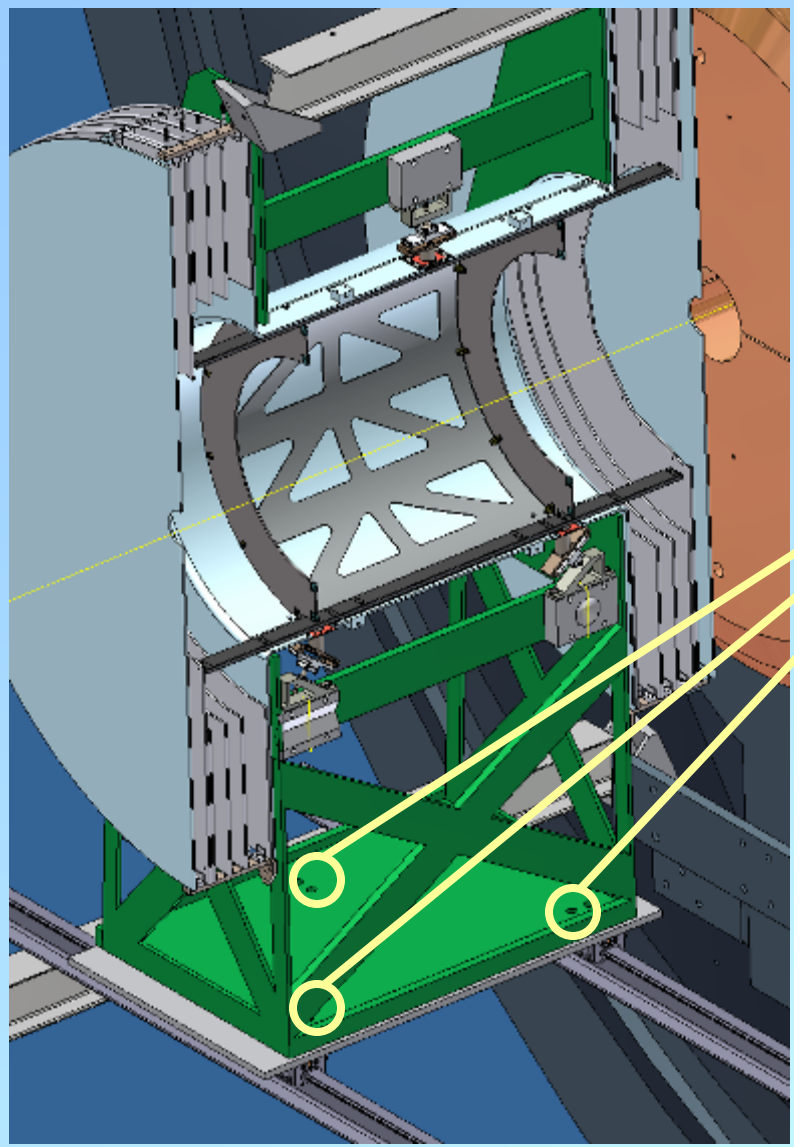
2 DOF (Y & Z)

0 DOF





1 DOF (Z)



West detector to be mounted on 2 precision railways. Detector to Railway mounting at 3 points to allow West detector to be aligned in situ to CM. (Note: beampipe is also aligned to CM. CM is aligned to IP.

Precision stops to be mounted on both rails to return west half to closed position after opening for maintenance.

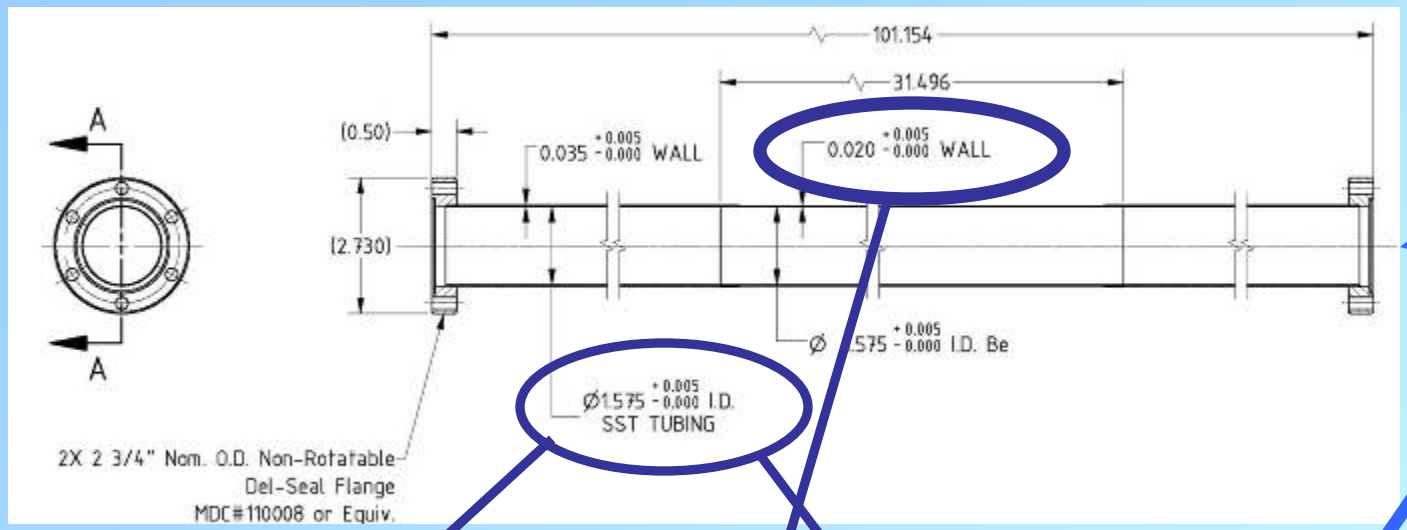
PHENIX

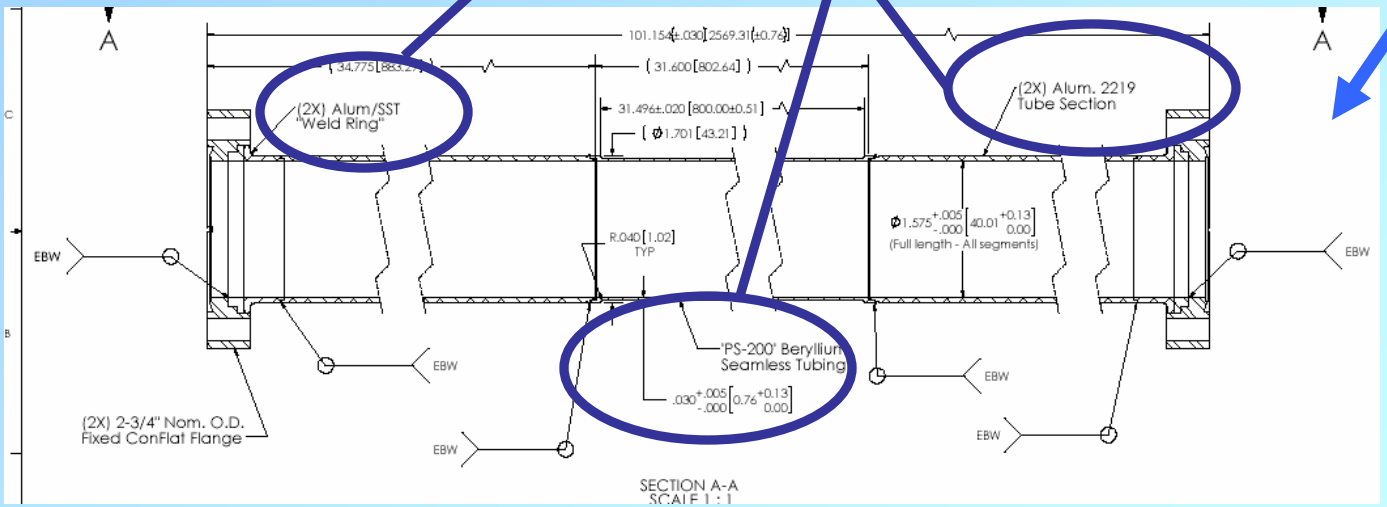
TECHNICAL SUPPORT 2009

Summary of Alignment Concept:

- CM is aligned to IP, accuracy limited by repeatability is currently ~+/- 2 mm
- Beampipe is aligned to CM centerline using supports tied to CM through RXNP/Nosecone/FOCAL (expected accuracy ~+/- 0.2 mm)
- West detector half is aligned to west support structure on bench prior to installation (nominal placement)
- East detector half is aligned to West detector half on bench prior to installation (accuracy ~+/- .05 mm)
- West detector half + support structure aligned by survey to CM and around beampipe (accuracy/repeatability TBD)
- East detector support structure loosely attached (used for parking east half near enough to self align with west half and parking east ½ when halves are separated for maintenance.
- VTX/FVTX electronics "big wheels" to be hard mounted to west and east support structures.
- Upper rails to be used for cabling maintenance, plumbing support and cabling strain relief.

New Beampipe





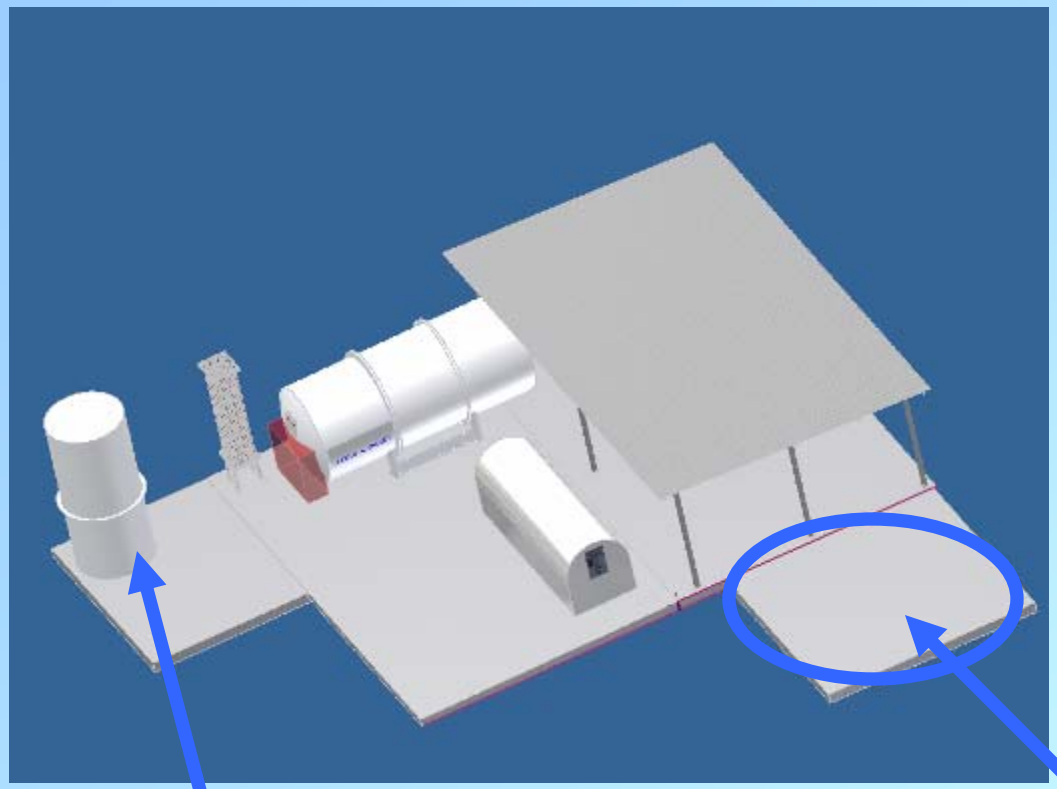
PHENIX

SCD

Brush-Wellman CAP

CAP Approval sent to B/W. Quotes rec'd from CS for spools & Transitions

Gas Pad Upgrade & Ar Dewar



We are preparing a spec package for the additional pad req'ments. New dewar to be leased; supply company to provide requirements for dewar section of pad.

New Liquid Argon Dewar to meet current and future demand on 16' x 20' pad

Additional 20' x 20' Pad area for storage of empty gas bottles

General location as shown, footprint (size) TBD

PHENIX

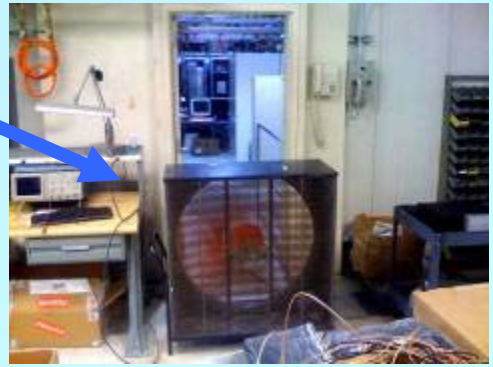
TECHNICAL SUPPORT 2009

These items passed on to Fred K.

2009 Building Maintenance Issues

- Mixing House thermometers not working properly
- Roof leaks in utility bathroom at northwest corner behind tech offices and over door between rack room and assembly hall.

- Trailer bathroom slop sink (for Custodians).
- Heat wrap tape for trailer bathroom toilet drains to preven freeze/clogging in winter.
- Improved Rack Room AC performance (This item has been addressed time and again but unsatisfactorily. Currently the AC fails periodically and is repaired only to fail again. On-condition maintenance is not adequate…an engineered solution is needed.)



- Back bathroom plumbing noise
- AH slop sink leak
- Icy conditions at mixing house north stairs

Shutdown '09 Major tasks (expect 5 month shutdown):

- 2009 shutdown Begins June 28
- End run, remove wall, MuID collars down, EC to AH (3 weeks)
- Install Station 1 South scaffolding (1 week)
- Install Station 2/3 scaffolding (2 weeks)
- PC1 East repair (4 weeks)
- Install stations 1, 2 and 3 south MuTrigger FEE's (12 weeks)
- MuTr decapacitations: station 3 south (3 weeks)
- RPC Station 3 North (see next slide)
- Mechanical/Electrical Plumbing installation of (4) new DCM racks
- Add Ar Dewar and expand gas pad to add storage (12 weeks)
- Prep for future upgrades/existing equipment maintenance & Repair (as necessary)

PHENIX

TECHNICAL SUPPORT 2009

RPC3 North Installation Schedule

Installation Concept Finalized	Mar. 31
Half-Octant Brackets, Connecting Blocks, under detector translating support design	Mar. 31
Installation Fixturing and Tooling Design	Apr. 30
Redesign crystal palace/IR Gas Barrier	May 29
End of Run 9	June 28
Fixturing/Tooling, Brackets/Block/support Fabrication	June 30
Move Shielding/Remove Crystal Palace	June 29-July31
Move cable trays and piping in gap 5	June 29-July 31
Simulated (practice) installation with new fixturing/ tooling	July 13-July 31
Install, level & survey support structure	Aug. 3 - Aug 14
Half Octant Testing and Assembly Complete (1^{st} half Octant ready by Aug.17, 16^{th} by Sep.18)	Aug. 17- Sep. 18
Mechanical Install Align & survey RPC3 N	Aug 17 – Sep. 30
Install 3 elect. Racks, all cables & gas system	Oct. 1 – Oct. 30
Commissioning	Nov. 1 – Nov. 30
Install new crystal palace/IR Gas Barrier & Shielding	Nov. 1 – Nov. 30
Start Run 10	Dec. 1

Safety, Security, etc.

PHENIX

TECHNICAL SUPPORT 2009

1. CPR Training for Electrical Safety 1 – Let us know if you need it we'll set up a class

2. This week's tier 1 inspection - Any Problems?

Where To Find PHENIX Engineering Info

Links for the weekly planning meeting slides, archives of past meeting slides,long term planning, pictures, videos and other technical info can be found on the PHENIX Engineering web site:

http://www.phenix.bnl.gov/WWW/INTEGRATION/ME&Integration/DRL_SSint-page.htm